

CLAIMS

1. A radio communication apparatus comprising:
first path measuring means for measuring the
number of paths of a forward link;

5 first determining means for determining
whether or not an operation for changing an antenna
is needed based on the number of paths; and
first multiplexing means for multiplexing a

first control signal, which puts a determination
10 result of said first determining means thereon, into
transmission data.

2. The radio communication apparatus according
to claim 1, wherein said first determining means
determines that execution of the operation for
15 changing the antenna is needed when the number of
paths of the forward link is smaller than a first
threshold value.

3. The radio communication apparatus according
to claim 1, further comprising first Doppler
20 frequency measuring means for measuring a Doppler
frequency of a received signal, wherein said first
determining means determines whether or not the
operation for changing the antenna is needed based
on the number of paths of the forward link and
25 Doppler frequency.

4. The radio communication apparatus according
to claim 3, wherein said first determining means
determines that execution of the operation for

changing the antenna is needed when the number of paths of the forward link is smaller than the first threshold value and the Doppler frequency is smaller than a second threshold value, which is present.

5 5. A radio communication apparatus comprising:

first path number measuring means for measuring the number of paths of a forward link; and
second multiplexing means for multiplexing a second control signal, which puts information showing the number of paths of the forward link thereon, into transmission data.

10 6. The radio communication apparatus according to claim 5, further comprising first Doppler frequency measuring means for measuring Doppler frequency of a received signal, wherein said second multiplexing means multiplexes said second control signal, which puts information showing the number of paths of the forward link thereon, a third control signal, which puts information showing the Doppler frequency thereon, into transmission data.

15 7. A communication terminal apparatus, having a radio communication apparatus thereon, said radio communication apparatus comprising:

20 first path measuring means for measuring the number of paths of a forward link;

25 first determining means for determining whether or not an operation for changing an antenna is needed based on the number of paths; and

first multiplexing means for multiplexing a first control signal, which puts a determination result of said first determining means thereon, into transmission data.

5 [8.] A radio communication apparatus comprising:

first separating means for separating a first control signal from a received signal; and

first change controlling means for determining whether or not an operation for changing a 10 transmission antenna is executed based on said first control signal.

15 [9.] A radio communication apparatus comprising:

second separating means for separating a second control signal from a received signal;

second determining means for determining whether or not an operation for changing an antenna is executed based on said second control signal; and

20 second change controlling means for determining whether or not an operation for changing a transmission antenna is executed based on determination result of said second determining means.

10. The radio communication apparatus according to claim 9, wherein said second 25 determining means determines that execution of the operation for changing the antenna is needed when the number of paths of a forward link is smaller than a first threshold value, which is preset.

11. The radio communication apparatus according to claim 9, wherein said second separating means separates a second control signal and a third control signal from a received signal, and said 5 second determining means determines whether or not the operation for changing an antenna is needed based on said second control signal and third control signal.

12. The radio communication apparatus 10 according to claim 11, wherein said second determining means determines that execution of the operation for changing the antenna is needed when the number of paths of a forward link is smaller than the first threshold value, which is preset, and 15 Doppler frequency is smaller than a second threshold value, which is preset.

13. A radio communication apparatus comprising:

second path number measuring means for 20 measuring the number of paths of a reverse link;

third determining means for determining whether or not a change of antenna is needed based on the number of paths of the reverse link; and

25 third change controlling means for determining whether or not an operation for changing a transmission antenna is executed based on a determination result of said third determining means.

14. The radio communication apparatus according to claim 13, wherein said third determining means determines that execution of the operation for changing the antenna is needed when 5 the number of paths of the reverse link is smaller than a third threshold value, which is preset.

15. The radio communication apparatus according to claim 13, further comprising second Doppler frequency measuring means for measuring a 10 Doppler frequency of a received signal, wherein said third determining means determines whether or not the change of antenna is needed based on the number of paths of the reverse link and the Doppler frequency.

15 16. The radio communication apparatus according to claim 13, wherein said third determining means determines that the change of antenna is needed when the number of paths of the reverse link is smaller than the third threshold 20 value, which is preset, and the Doppler frequency is smaller than a fourth threshold value, which is preset.

17 A base station apparatus, having a radio communication apparatus thereon, said radio communication apparatus comprising:

first separating means for separating a first control signal from a received signal; and
first change controlling means for determining

whether or not an operation for changing a transmission antenna is executed based on said first control signal.

18. A transmission antenna changing method
5 comprising the steps of:

measuring the number of paths of a link;
determining whether or not an operation for changing an antenna is needed based on the measured number of paths; and

10 performing change-control to determine whether or not an operation for changing a transmission antenna of forward transmission data is executed based on a determination result of said determining step.

15 19. The transmission antenna changing method according to claim 18, wherein it is determined in said determining step that execution of the operation for changing the antenna is needed when the number of paths of the link is smaller than a 20 first threshold value, which is preset.

20. The transmission antenna changing method according to claim 18, further comprising a step of measuring a Doppler frequency of a received signal, wherein said determining step determines whether or 25 not the operation for changing the antenna is needed based on the number of paths of the link and the Doppler frequency.

21. The transmission antenna changing method

according to claim 20, wherein it is determined in said determining step that execution of the operation for changing the antenna is needed when the number of paths of the link is smaller than the 5 first threshold value, which is preset, and the Doppler frequency is smaller than a second threshold value, which is present.